

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS**

Sloan Valve Company,

Plaintiff

v.

Zurn Industries, Inc. and Zurn Industries, LLC,

Defendants.

Case No. 1:10-cv-00204

Judge: Hon. Amy J. St. Eve

**ZURN’S POST-HEARING BRIEF IN SUPPORT OF ITS *DAUBERT* MOTION TO
EXCLUDE RICHARD BERO**

I. BERO’S MODEL IGNORED THE LAW OF DEMAND.

Mr. Bero calculated price erosion/effect together on his Schedule 11. (Tr. at 150-153)¹ On Schedule 3, he took \$2.2 million from Schedule 11, called it “price erosion,” and added it to his total damages for the years after the “provisional” period, when no lost profits are allowed. A key flaw in his price “effect” and price erosion calculation, and one reason it should be excluded, is that he failed to consider both economic requirements for assuming perfectly inelastic demand for MDFVs. A second reason it should be excluded is that his assumption of perfect price inelasticity was based on the opinions of Sloan industry experts, who said that Sloan could have made all the MDFV sales at higher prices that were actually made at 20-30% lower prices, and those opinions have now been excluded.

The CAFC incorporated the Law of Demand into the law of patent damages in *Crystal Semiconductor v. TriTech Microelectronics International*, holding that a patentee claiming damages based on an assumed higher price must produce credible economic evidence of the reduced quantity at the patentee’s intended higher price. 246 F.3d 1336, 1357-59 (Fed. Cir.

¹ All “Tr.” cites refer to the March 11, 2014 hearing transcript.

2001).² (See attached graph, Appendix A, which illustrates these principles.)

Bero believed he could avoid this requirement by assuming that MDFVs are one of the “very rare” products for which all consumers are insensitive to the higher prices he assumes. *Id.* at 1359. But MDFVs are not such products. As explained in *Crystal Semiconductor*, proving perfect price inelasticity has two requirements: (1) absence of acceptable non-infringing alternatives (ANIAs), **and** (2) proof that the product is a “necessity,” meaning a product that consumers cannot do without and will pay any price for the product, such as heroin to addicts or life saving drugs. *Id.* (Tr. at 167-71.)

The “necessity” prong of the perfect inelasticity test is why, contrary to a common misperception, even monopolists cannot charge as much as they want without sales declining because, unless the good is a necessity, consumers can always decide not to buy. It is also why not every patentee who proves the *Panduit* test (which includes proving absence of ANIAs; see Exhibit 17, *Bero BVR* at 520-523.)³ automatically gets price erosion. *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156 (6th Cir. 1978). Indeed, as Bero has written, price erosion awards are difficult to prove and infrequently awarded. (Exhibit 17 at 528-29)

Bero did not consider whether MDFVs are a necessity. (See Sloan Hearing Slides 20 and 33 “Considerations.”) He agreed MDFVs are **not** necessities, and he developed no proof to the contrary. (Tr. at 178-80) He conducted no study or survey to quantify the perfect price insensitivity he assumed. Moreover, no MDFVs have been sold at Sloan’s intended higher price (Tr. at 156), underscoring that his perfect price insensitivity assumption is wholly unsupported.

² As Zurn has previously explained, the method allowed for proving perfect price inelasticity in *Ericsson*, was a “benchmark analysis,” in which the patentee’s expert compared the performance of the accused products to the performance of a different product for which there was no direct competition. *Ericsson, Inc. v. Harris Corp.*, 352 F.3d 1369 (Fed. Cir. 2003). (Dkt. 629 at 16-17) Bero did no benchmark analysis: the word “benchmark” does not even appear in any of his reports.

³ All “Exhibit” cites refer to Defendant’s Exhibits from the March 11, 2014 hearing.

It is undisputed that 1.28 systems would have been ANIAs for some customers beginning in at least 2010 (prompting the fourth report Bero tendered at the hearing, which should be excluded because it is both untimely and also assumes MDFVs are necessities), so Bero now admits his calculation of price erosion in Schedule 11 is wrong.⁴ But Bero mistakenly insisted that he does not need to correct his “price effect” calculation. He does so because he says there were no ANIAs in 2006, the time he set the hypothetical negotiation. That, however, does not cure his error in assuming perfect price inelasticity for a product that is not a necessity.

Sloan never gave him a specific number for the volume of all MDFV products it believed in 2006 it could sell at its intended higher price (Tr. at 196-99), and Sloan’s industry experts’ opinions premised upon perfect price inelasticity are now excluded. So he simply assumed the volume would be the same volume that had actually been sold at about a 25% lower price – meaning he assumed perfect price inelasticity, with no basis to do so. (Tr. at 154, 160, 188-93; Appendix A) But because his calculation of both price erosion and price effect depend on erroneously assuming perfect inelasticity, his calculation of both components is wrong. His entire damages model, which is premised on his price effect/erosion assumption, should be excluded for this reason alone.

Bero conceded that as the price of MDFVs increase, each customer will eventually decide the price is too high. And he acknowledged that the breaking point will be different for each customer. Bero did not quantify that breaking point for any customer. (Tr. at 178-80)

The industry experts’ now-excluded opinions about perfect inelasticity were the only

⁴ The reason he tendered his fourth report is due to 1.28 systems being an ANIA. His attempt to blame his late report on the Court’s recent order excluding industry experts makes no sense. Bero admitted at his March 1, 2013 deposition that 1.28 systems were ANIAs, but waited over a year to correct for that important fact. (Tr. at 183-87)

basis he specifically cited in his reports for that assumption.⁵ (Tr. at 207-09) His untimely attempt at the hearing to quantify a “pay back” analysis should be excluded because no such analysis was in any of his reports. The only pay back calculation that had ever been done was the one in Mr. Ballanco’s report. But in the Court’s October 15, 2013 decision, which thoroughly explained facts and economic principles Bero continued to ignore for at least five more months, the Court excluded Ballanco’s price insensitivity opinion because his pay back analysis was not a reliable basis to assume perfect inelasticity. (Dkt. 663 at 14-18) Bero’s analysis is also unreliable.

The pay back in the newsletter Sloan used at the hearing addressed savings in two **women’s** bathrooms at Purdue University. Bero has no proof that any other customers’ water use reduction or even utility rates would be similar.⁶ As Mr. Madison explained, MDFV savings in public facilities (airports or stadiums) are lower because users need education. However, women’s bathrooms in particular, with repeat, educated users, such as at Purdue, are more likely to achieve savings than any bathroom in a baseball stadium. (*See* Dkt. 689-2, Madison 2/14/13 Dep. Tr. at 59:10-61:9)

The downward slope of a demand curve under the Law of Demand reflects the different price sensitivities of different customers. The demand curve Bero assumed, a straight line in the relevant range, reflects that in a perfectly inelastic market **every** customer has the same perfect insensitivity, defying the Law of Demand. (Tr. at 192-196; Appendix A) A reasonable royalty award is based on the “reasonable” expectations of the parties. *Georgia-Pacific v. United States Plywood Champion Papers, Inc.*, 446 F.2d 295, 297 (2d Cir. 1971). Bero’s assumption of

⁵ Bero never said in his report that he, **independently of the industry experts**, had an opinion on the quantity that Sloan could have sold at the higher price. Note his carefully worded phrasing in his 1/28 report at 48, “Sloan believes...” and at 61, “I understand that...” *See* the same wording in his Rebuttal Report (Exhibit 2 at 60).

⁶ For obvious anatomical reasons, MDFVs will also save more water in women’s than men’s bathrooms.

perfect inelasticity depends upon MDFVs being necessities, which is not a reasonable basis for any negotiation, hypothetical or real.

II. BERO'S "MIDPOINT" METHOD VIOLATES THE *UNILOC* RULE.

Bero closed the negotiating gap by mechanically adding the parties' negotiating positions together, then dividing by two. He repeats that step every year – regardless of any negotiating history between these parties, in this industry, for this technology or for any similar technology. A 50/50 split reflects no negotiation, let alone one specific to this case. It is simply a formula, like the 25% Rule discredited in *Uniloc v. Microsoft Corp.*, 632 F.3d 1292, 1314-1315 (Fed. Cir. 2011). Bero's rationale for a 50/50 split was that it was the only way to close the "huge" negotiating gap. (Tr. at 113-14) But why 50/50 and not 60/40? (Tr. at 219) The size of the gap created by his own flawed model is not a principled explanation.

Uniloc's holding applies beyond selecting a starting point in a hypothetical negotiation based on the 25% Rule. It also applies to closing the gap in Bero's model. The rationale of *Uniloc* and its progeny applies to **any** arbitrary method for choosing a starting point to a hypothetical negotiation, because royalty opinions cannot be based on "an arbitrary, general rule, unrelated to the facts of this case." *Id.* at 1318. (See Dkt. 663 at 13-14) *Uniloc* also held that once there is an arbitrary step in the scenario, such as Bero's 50/50 split, it cannot be remedied by adjusting it with the *Georgia-Pacific* ("GP") factors. *Uniloc*, 632 F.3d 1317-18. Violating the *Uniloc* rule is therefore an independent reason to exclude Bero's entire model.

III. BERO VIOLATED THE FUNCTIONAL RELATION TEST AND EMVR.

A. Bero Ignored the Functional Relationship Test and the EMVR.

Bero admitted that the "Other Collateral Products" in his Schedule 5 (e.g., faucets) do not pass the functional relation test (Tr. at 226), which a patentee must satisfy to include non-patented products in a lost profits analysis. See *Rite-Hite v. Kelley Co., Inc.*, 56 F.3d 1538, 1550

(Fed. Cir. 1995). Bero nonetheless included in his royalty calculation 100% of the profit for each faucet, urinal valve and urinal diaphragm that he claims Sloan would have sold but for Zurn's infringement. The parties' bargaining positions in Bero's scenario include 100% of Sloan's purported lost profits for non-patented items and 100% of Zurn's purported profits on the same collateral goods. (Tr. at 228; Schedule 4)

In addition, because he mistakenly believes he can use *GP* Factor 6 as a **quantitative** not a **qualitative** factor (the reason he includes 100% of collateral profits), the Entire Market Value Rule (EMVR) must apply to his unprecedented method. *Cornell v. Hewlett-Packard Co.*, 609 F.Supp.2d 279, 286-87 (N.D.N.Y. 2009), *Micro Chem., Inc. v. Lextron, Inc.*, 317 F.3d 1387, 1393. (See Dkt. 663 at 9-11; Dkt. 558 at 13-17) Bero also ignored the requirement for sound economic data to invoke the "narrow" EMVR exception to a patentee's obligation to apportion the value of unpatented collateral products, or unpatented features of MDFVs themselves, from the value of the MDFV's low-flush feature. (See Dkt. 663 at 9-11; Dkt. 558 at 13-17)⁷ He relied instead on general market information obtained primarily from Sloan personnel. (Tr. at 236)

Bero, who is not an industry expert, testified to his belief that the entire value to consumers of MDFVs and any collateral products sold with them, as well as "**the basis**" for consumer demand for those products, is just the low flush feature. But his belief based on general market information is not a reliable basis to invoke the EMVR – he never even talked to customers and has no "econometric studies, consumer surveys, regression analysis or other market place-wide evidence of demand sensitivities" needed to invoke the EMVR. *Inventio Ag*

⁷ That Bero did so, as reflected in his hearing testimony (Tr. at 239-40), contradicts his article stating that where, as here, the patent is an improvement patent and "in reality, there is simply one exclusive or distinguishing feature or aspect of the product that separates the patented product from a product that is not covered by the patent," a patentee must account for the fact that the "**value of the invention is a function of that distinguishing feature rather than the value of the entire product.**" (*emphasis added*).(Exhibit 14, Bero and Eads, "Constructing Royalty Rates" at 4-5.)

v. Otis Elevator Co., 2011 WL 3359705, *4 (S.D.N.Y. 2011).

B. Bero Improperly Used the Quest Data.

Bero used the Quest data, and the Quest data alone, to calculate his collateral product ratios (Tr. at 228), to a deceptively precise two decimal places. He used these ratios to make assumptions about the buying behavior of all Sloan and Zurn manual dual flush customers: the ratios supposedly reflect the number of collateral products that all customers typically buy when they also buy a MDFV. He denied at the hearing that he used the Quest sample data to extrapolate to the behavior of a larger group, but Bero undeniably used those ratios to describe how often all MDFV customers in general buy faucets, urinal valves and their diaphragms when they buy a MDFV. In fact, Bero mathematically applied the Quest ratios to sales of MDFVs to quantify the amount of collateral goods Sloan purportedly would have sold.⁸

Because he admits he is not an expert in the methods for determining when it is appropriate to extrapolate from a sample to the behavior of a larger group (Tr. at 232), his use of the Quest data to quantify collateral product ratios fails to satisfy Rule 702. Bero saying he uses this kind of data “all the time” does not satisfy Sloan’s Rule 702 burden to prove that his opinions are “the product of reliable principles and methods” and are based on “sufficient facts or data.” Sloan cannot by the *ipse dixit* of the expert himself satisfy Rule 702. *See General Electric Co., v. Joiner*, 522 U.S. 136, 137 (1997).

Bero’s hearing testimony also proves that he improperly used the Quest ratios to create expectations that Sloan in fact would **not** reasonably have had during any 2006 negotiation. He used them, he claimed, merely to confirm ratios that Sloan employee Mr. Madison would have known during the hypothetical negotiation, specifically that Madison would have known in 2006

⁸ The ratios Bero uses on Schedule 8.0 are derived directly from Schedule 10.0, which summarizes the Quest data.

that the faucet/MDFV ratio was 0.20. (Tr. at 229-31; Sloan Hearing Slide 15) But Bero's deposition, which was read at the hearing, contradicted his hearing testimony: Madison, the only support Bero cites for this supposed ratio being known to Sloan in 2006, would **not** have known the faucet/MDFV ratio in 2006. (Tr. at 229-31)

IV. BERO DEVIATES FROM GENERALLY ACCEPTED METHODS FOR CALCULATING A ROYALTY.

Another flaw is that Bero did not follow accepted *Georgia-Pacific* methodology when he used **qualitative** GP Factors 5 and 6 as **quantitative** factors. (Exhibit 14 at 7-8; Exhibit 17 at 539-541) He believes doing so, contrary to his own writings, allows him to include in the initial bargaining positions 100% of the parties' respective profits, including lost profits as "price effect," and for collateral products Bero admits Sloan could **not** recover as lost profits. He believes his unprecedented method avoids the rules restricting when a patentee can get lost profits by calculating a per unit royalty that is the same as a per unit lost profit award. His testimony speaks for itself (Exhibit 3, Bero Dep. Tr. at 73:23-74:8):

Q: [I]f you included 100 percent of the profit from the sale of collateral products in your lost profit -- I mean in your reasonable analysis, how is that any different from seeking lost profits on the collateral sales?

A: How is it different?

Q: Correct.

A: It's from a -- I mean the numbers are the same.

Bero's elaborate model disguises its flaws. One way scientists, economists and lawyers assess the validity of complex models is through simplifying assumptions. *See* Posner, *Economic Analysis of Law*, 3rd Ed. at 16. Appendix B, attached, assumes no price effect/erosion damages and the same Collateral and Product profits line items for both parties.⁹

⁹ As Bero said, this is not an impossible scenario. (Tr. at 217-18) Indeed, in his original Schedule 4, (Exhibit 1, Jan. 28 Report) he used identical data for both Sloan and Zurn for calculating each parties' collateral profits line items. The important point is that these or any assumed inputs to his model will

His Schedule 4 method has four steps, shown in Appendix B. First, calculate 100% of the patentee's lost profits, even profits it could not recover as lost profits. Second, calculate 100% of the infringer's profits on the same items to set the infringer's initial bargaining position. Third, add the two bargaining positions together, then divide by 2 to find the midpoint. Fourth, repeat the midpoint formula every year, then find the average of the midpoints (which is how Bero got from a \$100 royalty to a \$106 royalty on his Schedule 4), to get a per unit royalty. (Tr. at 216)

Doing so shows that Bero's Schedule 4 method yields a per unit "royalty" that is the same as the patentee's per unit lost profits. That is precisely what Bero intended to achieve with his method: attempt to get lost profits disguised as a royalty to avoid the rules restricting lost profit damages. (Exhibit 3, Bero Dep. Tr. at 66:24-83:14)

Bero hopes his method: (1) avoids the rule prohibiting lost profits in the provisional period (here 2006-2009); (2) avoids the rule prohibiting lost profits on collateral goods in any year -- faucets and urinal valves he admits are not functional units with MDFVs; (3) allows Sloan to get 100% lost profits for each of the accused infringer's product and collateral sales, without proving entitlement to the EMVR, and (4) allows Sloan to get 100% lost profits in years when ANIAs appeared by using the "Book of Wisdom" for actual data when it suited him after 2006, but by selectively ignoring ANIAs he admits appeared later. (Tr. at 205)

Bero cited no case where a party has been awarded or even allowed to assert a royalty based on 100% profit calculations for both parties' bargaining positions when lost profits would not otherwise be available under CAFC rules. Bero's method yields a rate of 136% of Zurn's \$78 average selling price (ASP), as Bero calculated on his Schedule 14.0 at 2. Bero did not cite

yield an output that is so dependent on 100% profit calculations on both sides of the negotiation that his model will yield what is essentially a per unit royalty that is a per unit lost profit calculation.

any case or real world license for a mechanical device where the rate was even near 136%. His method is so far from the norm that he testified its output is “backward.” (Exhibit 3, Bero Dep. Tr. at 67:20-68:17)

Although never allowed before, Bero’s Schedule 4 method if allowed now will be the road map for patentees to avoid CAFC rules limiting lost profit damages: perform a per unit profit analysis for both negotiating positions, mechanically split the difference and call it a per unit “royalty.” Bero’s method should not be allowed to dismantle the rules of *Crystal Semiconductor*, the functional relation test of *Rite-Hite*, the *Uniloc* rule, the rule prohibiting lost profits in the provisional period, the rules governing the narrow EMVR exception, and the *Panduit* rules requiring no ANIAs in any period for which lost profits are sought on all accused sales.

V. **BERO SHOULD NOT BE ALLOWED TO CORRECT HIS FLAWS.**

Bero’s entire report should be excluded due to all or even one of its flaws, because of the interrelationship among his many schedules. For example, excluding just price effect would require Bero to reevaluate Sloan’s bargaining position in 2006 and for each following year. Doing so would also require adjusting his new rate under the generally accepted use of *GP* Factors 5 and 6 as **qualitative**. (Hearing Ex. 17 at 7-8) Because the “negotiating gap” would be narrower, he may (or may not) drop his arbitrary 50/50 methodology. Bero has known about these methodological flaws at least since Zurn’s damages expert’s report itemizing them was served nearly a year ago. (*See* Dkt. 630-4) It is far too late for Bero to supplement his expert reports or his deposition under Rule 26 and LPR 5.3. (*See, e.g.* Dkt. 569, where Sloan successfully objected to Zurn’s motion for its damage expert to correct **within 30 days** a mistake reading footnotes in Bero’s schedules.)

The prejudice to Zurn would be severe. Zurn has spent many hundreds of thousands of

dollars on consultants and lawyers to analyze Bero's complex schedules and shifting opinions, and many, many hundreds of thousands more defending a case not worth anything near the amount Bero opines. If he is given yet another chance, Zurn should be allowed to expose any additional flaws in any new methodology he employs. But the pretrial conference grows near, and Zurn (and presumably the Court) does not want to do another *Daubert* motion.

Daubert mandates particular vigilance for opinions having a sheen of authority and appearance of precision, but which are premised on flawed methods and insufficient data. Bero has forfeited any right to seek leave for another report under LPR 5.3. This case should go to trial based on Zurn's expert's damage model. Bero could qualitatively critique Zurn's expert's report at the trial, but Bero should be excluded from asserting any opinion about an alternative measure of Sloan's damages.

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Respectfully submitted,

/s/ Nicole M. Murray

Nicole M. Murray (ARDC 6278103)

nicole.murray@quarles.com

John E. Conour (ARDC 6305651)

john.conour@quarles.com

QUARLES & BRADY LLP

300 N. LaSalle St., Suite 4000

Chicago, IL 60654

Telephone: (312) 715-5000

Facsimile: (312) 715-5155

David R. Cross (#90785227)

david.cross@quarles.com

Patrick J. Murphy (Admitted Pro Hac Vice)

patrick.murphy@quarles.com

QUARLES & BRADY LLP

411 E. Wisconsin Avenue, Suite 2040

Milwaukee, WI 53202

Telephone: (414) 277-5000

Facsimile: (414) 271-3552

John W. McIlvaine (Admitted Pro Hac Vice)

Thomas C. Wolski(Admitted Pro Hac Vice)
Steven M. Johnston (Admitted Pro Hac Vice)
sloanvzurn@webblaw.com

THE WEBB LAW FIRM, P.C.

One Gateway Center
420 Ft. Duquesne Blvd., Suite 1200
Pittsburgh, PA 15222
Telephone: (412) 471-8815
Facsimile: (412) 471-4094

**Attorneys for Defendants, Zurn Industries, Inc.
and Zurn Industries, LLC**

CERTIFICATE OF SERVICE

I hereby certify that on March 17, 2014, I electronically filed Zurn's Post-Hearing Brief in Support of Its *Daubert* Motion to Exclude Richard Bero with the Clerk of the Court using the CM/ECF system, which will send an electronic copy of the foregoing to counsel of record and constitutes service under Federal Rule of Civil Procedure 5(b)(2)(D) pursuant to Local Rule 5.9 of the Northern District of Illinois.

/s/ Nicole M. Murray